Intended and actual avoidance of road use situations by older drivers and pedestrians, by gender and age

Mark King

International Conference on Aging, Mobility and Quality of Life
24-26 June 2012, University of Michigan, Ann Arbor, MI, USA

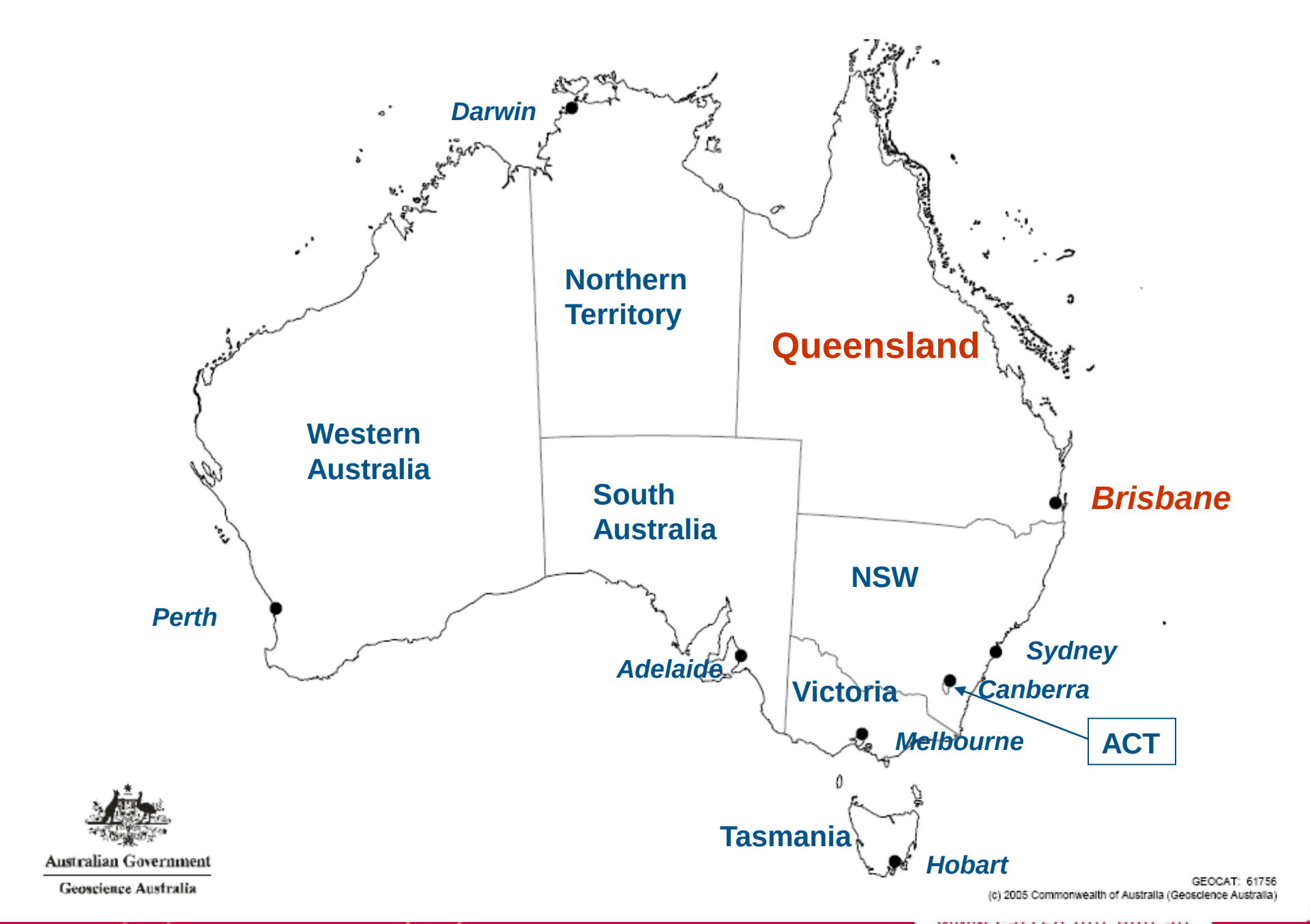
Centre for Accident Research & Road Safety - Queensland

CARRS-Q is a joint venture initiative of the
Motor Accident Insurance Commission
and Queensland University of Technology

www.carrsq.qut.edu.au

Overview

- The Queensland context
- Rationale and aims
- Method
- Demographics and basic data
- Avoidance of driving and walking situations
- Success of intended avoidance
- Further analyses (preliminary results)
- Implications



Australian Government
Geoscience Australia

GEOCAT: 61756
(c) 2005 Commonwealth of Australia (Geoscience Australia)

Size:

Queensland 1,852,642 km²
Alaska 1,481,347 km²

Population:

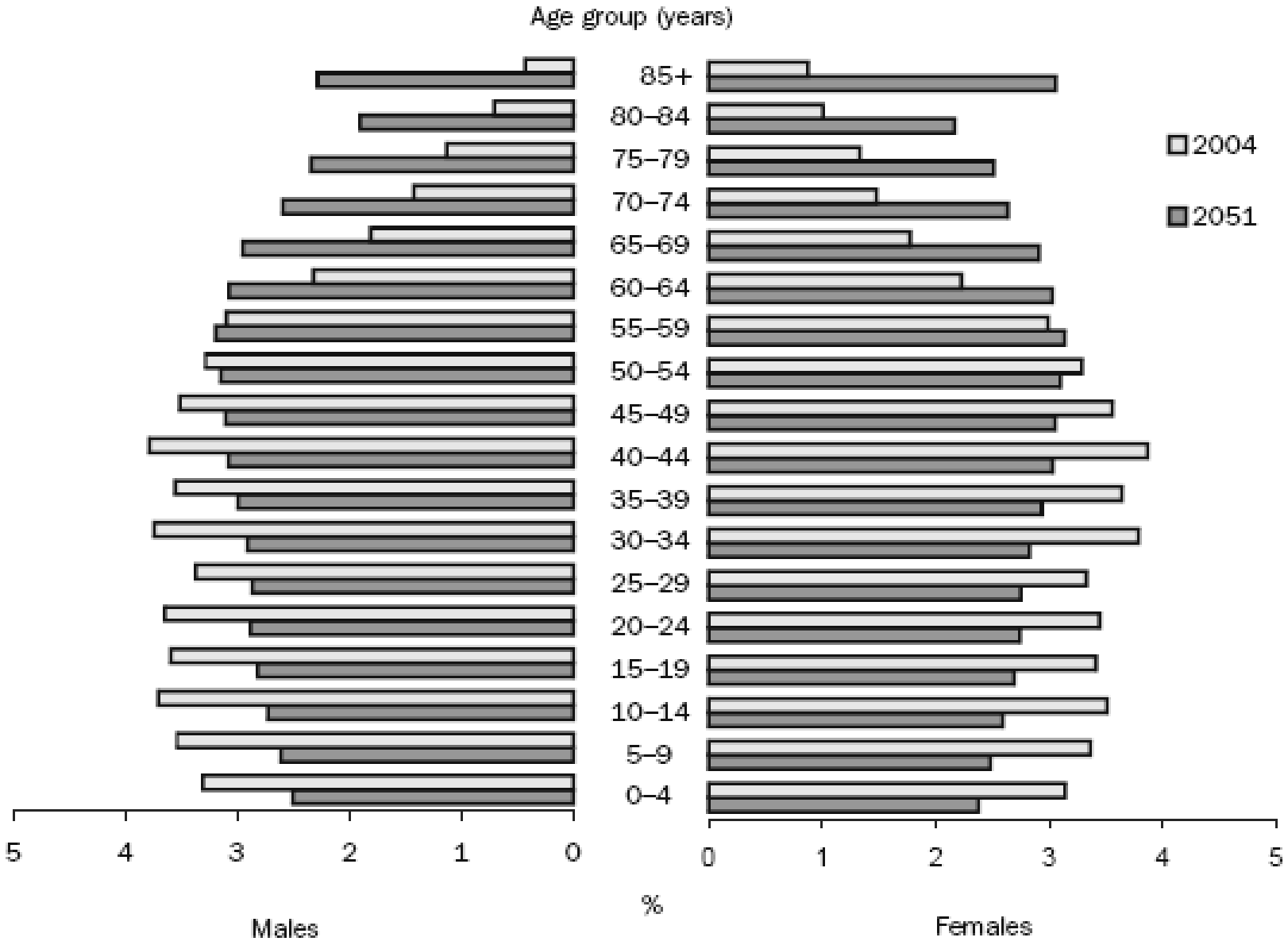
Q'land 4.5 m = Louisiana
Brisbane 2.1 m = Houston

Population density:

Queensland 2.43/km²
Wyoming 2.26/km²

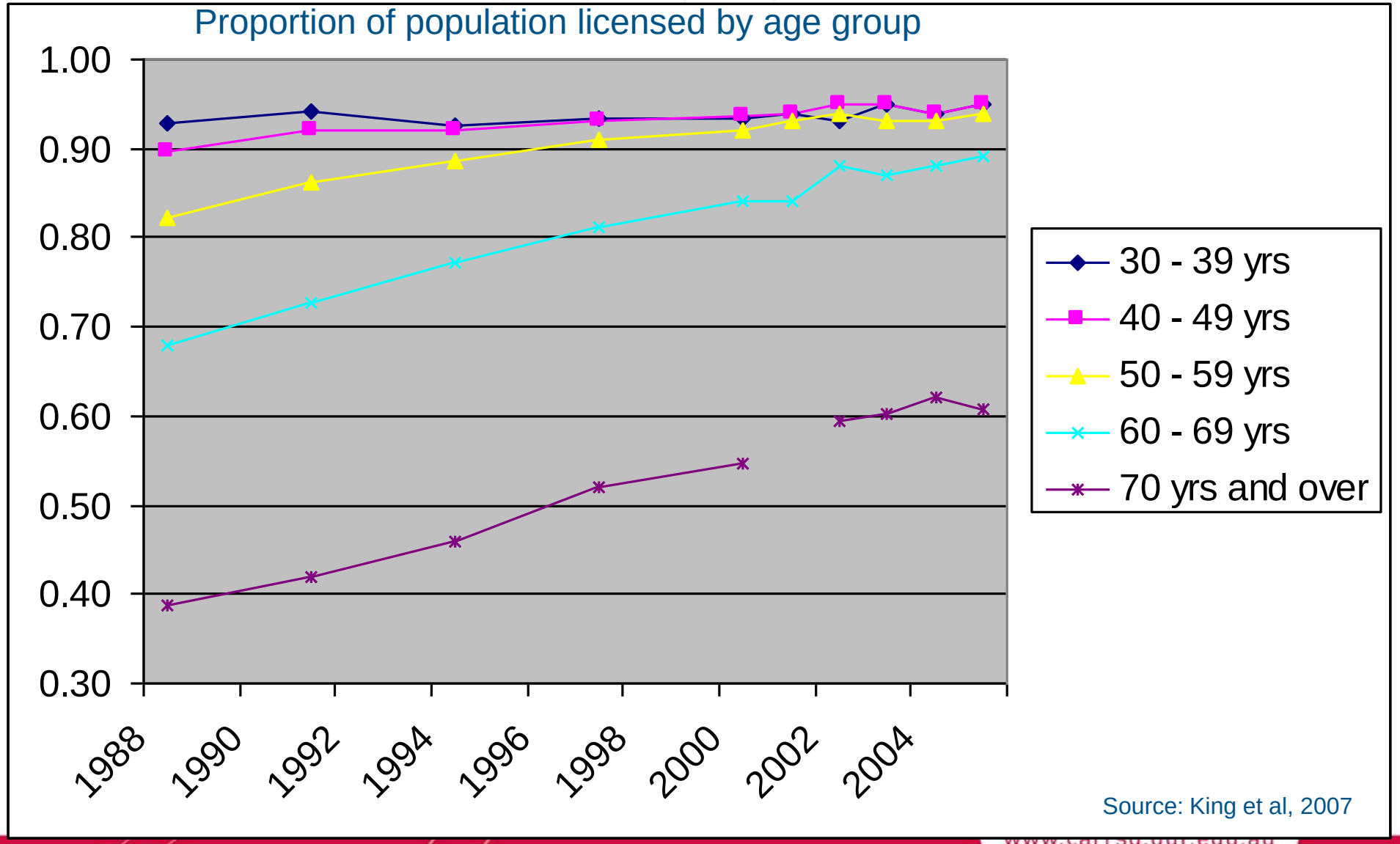
Rationale

- Population ageing
- Increased numbers of older drivers and pedestrians – especially women
- Need for continued mobility and access



Age profile of the Queensland population (2004) and projected profile (2051), by gender (Source: ABS, 2006)

Cohort licensing effect



Source: King et al, 2007

Rationale

- Frequency of driving decreases with age
- Women cease earlier (Ragland et al 2004)
- A mobility issue due to demographic shift (Oxley et al 2010)
- Evidence that avoidance associated with cognitive decline
- Evidence of gender differences:
  - Men avoid stressful driving situations (Adrian et al 2010)
  - Women reduce distance and frequency of travel rather than avoiding (Ross et al 2009)

Rationale

- Walking – less research into avoidance
- Half of injuries experienced by older pedestrians do not involve a vehicle (Dunbar et al 2004)

Aims

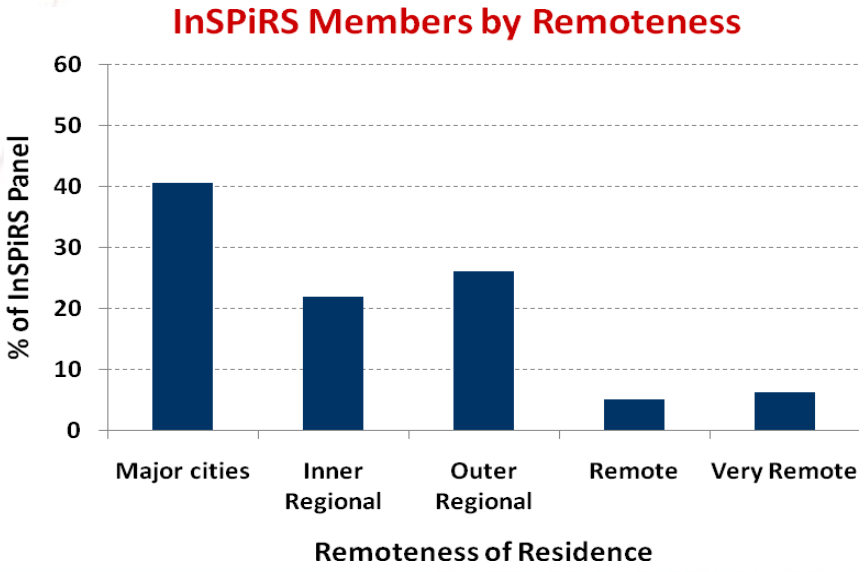
- As part of a broader project, to:
  - Ascertain whether stated avoidance of driving situations by older drivers translates into actual avoidance
  - Extend this research to include consideration of avoidance of walking situations
  - Investigate whether there are important gender differences in avoidance of driving and walking situations by older people

Method

- Questionnaire phone interview, 30 minutes
- Situations they avoided, as driver or pedestrian
- How often they actually drove or walked in those situations:
  - 11 driving situations
  - 9 pedestrian situations
- 6 point scale (Never → Nearly all the time)

Sample

- Drawn from CARRS-Q InSPiRS panel:
  - About 2,500-2,700 people within households
  - All those aged 60 and above contacted, about half participated
  - 300 total
    - 115 male
    - 185 female



Driving situations

- In the rain
- When alone
- On familiar roads
- On unfamiliar roads
- On highways/ freeways
- On other high traffic roads
- In peak hour
- At night
- At night in the rain
- On extended trips (i.e. over 2 hours)
- With children as passengers

Walking situations

- In the rain
- When alone
- In familiar neighbourhoods
- In unfamiliar neighbourhoods
- In residential areas
- In business and commercial areas
- Along high traffic roads
- At night
- On the road due to lack of footpaths

Demographics

	Male (n = 115)		Female (n = 185)	
	M	SD	M	SD
Age	69.75	5.74	68.51	5.35
Years licence held	51.31	5.73	46.67	7.54
Driving hours per week	6.61	6.98	5.92	4.80
Walking hours per week	3.03	3.82	2.20	3.29

"Drive": control vehicle, i.e. not as a passenger

"Walk": on footpath or road

Exposure

- Both current driving hours and walking hours declined with age
- In addition “driving hours in past 3 years” was greater than current driving hours

Results

- Broad descriptive overview:
  - Even “risky” situations not avoided much
  - Gender differences
  - Variation by situation in success of avoidance
- Example:

Male

		To what extent do you avoid driving under the following conditions?- At night						
		Never	Hardly ever	Occasionally	Quite often	Frequently	Nearly all the time	Total
How often do you drive under the following conditions?- At night	Never	12	0	1	2	1	5	21
	Hardly ever	22	0	3	1	2	6	34
	Occasionally	29	0	1	1	3	2	36
	Quite often	11	0	0	0	0	0	11
	Frequently	11	1	0	0	0	0	12
Total		85	1	5	4	6	13	114

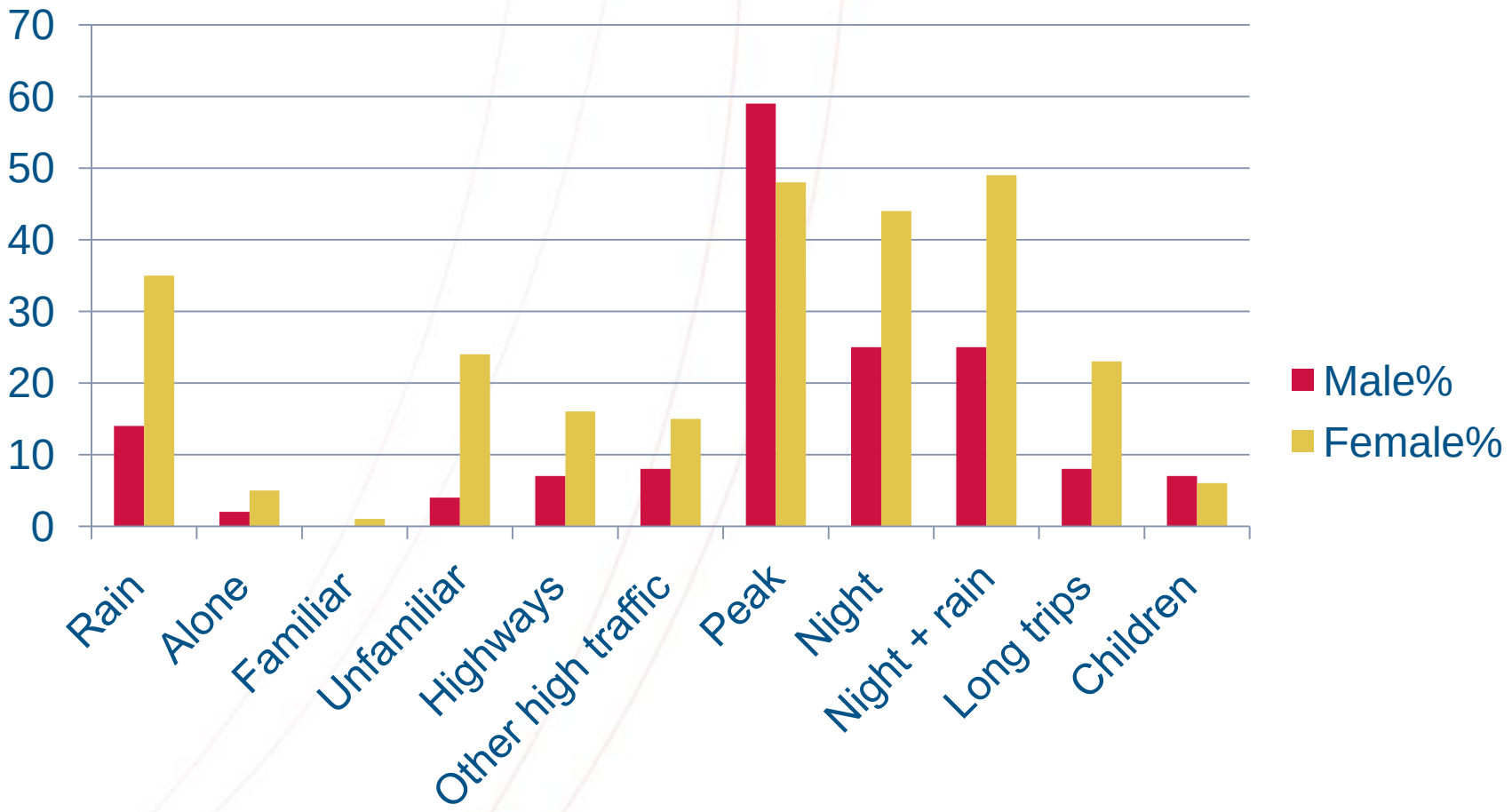
Female

		To what extent do you avoid driving under the following conditions?- At night						
		Never	Hardly ever	Occasionally	Quite often	Frequently	Nearly all the time	Total
How often do you drive under the following conditions?- At night	Never	8	0	1	1	5	25	40
	Hardly ever	22	0	6	6	9	6	49
	Occasionally	32	2	5	4	3	2	48
	Quite often	19	1	4	3	0	0	27
	Frequently	15	0	0	0	1	0	16
	Nearly all the time	3	0	0	0	0	0	3
Total		99	3	16	14	18	33	183

Avoid driving at least occasionally…

	Male %	Female %
In the rain	14	35
Alone	2	5
On familiar roads	0	1
On unfamiliar roads	4	24
On highways/freeways	7	16
On other high traffic roads	8	15
In peak hour	59	48
At night	25	44
At night when it's raining	25	49
On extended trips	8	23
With children	7	6

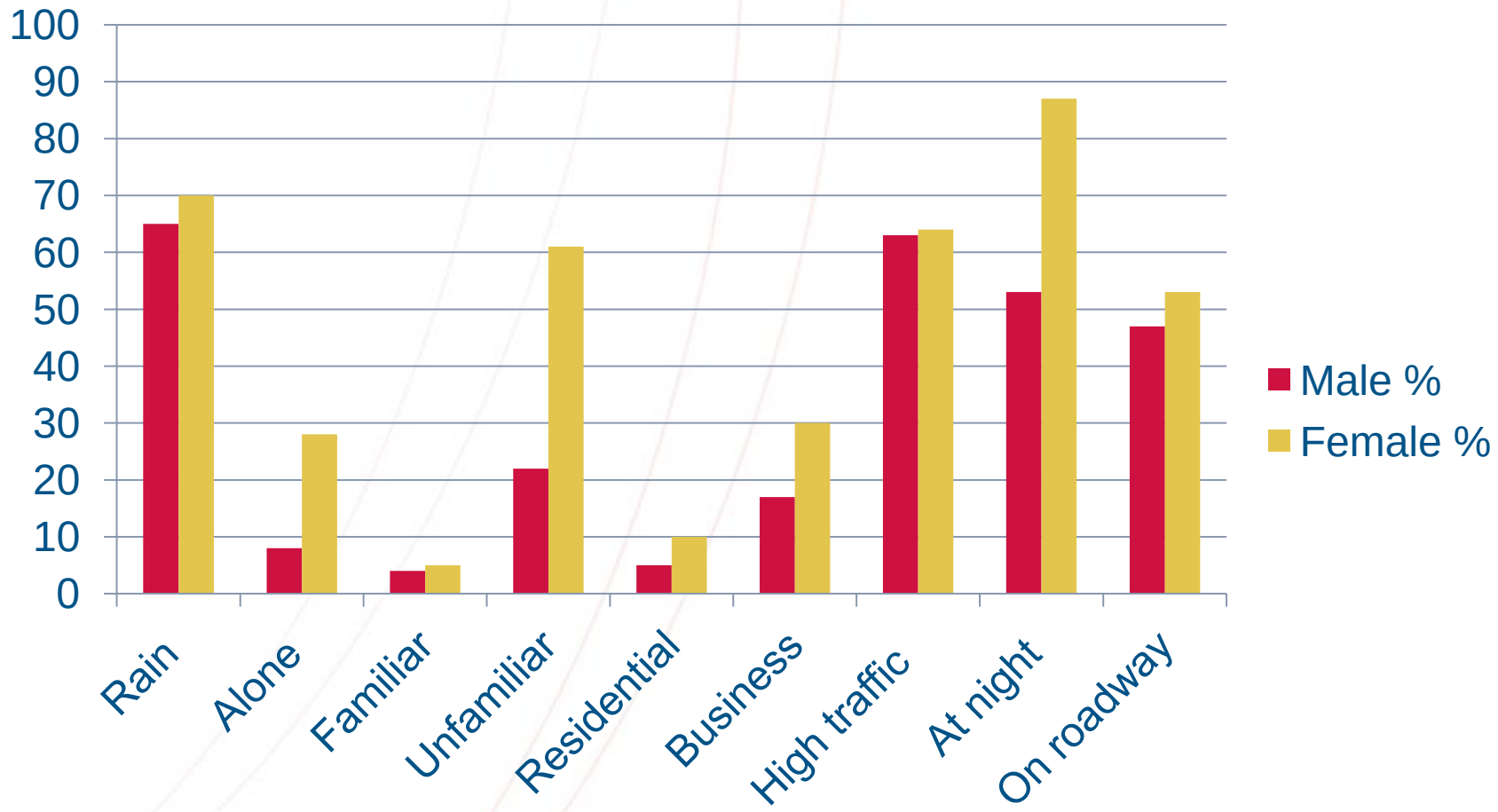
Avoid driving at least occasionally…



Avoid walking at least occasionally…

	Male %	Female %
In the rain	65	70
When alone	8	28
Familiar neighbourhoods	4	5
Unfamiliar neighbourhoods	22	61
Residential areas	5	10
Business and commercial areas	17	30
Along high traffic roads	63	64
At night	53	87
On the road due to lack of footpaths	47	53

Avoid walking at least occasionally…



Results

- Men reported less avoidance of driving situations than women, except for driving in peak hours
- Men reported less avoidance of walking situations than women, but the difference was not as marked
- To the extent that they can be compared, there appears to be higher avoidance of walking situations than driving situations

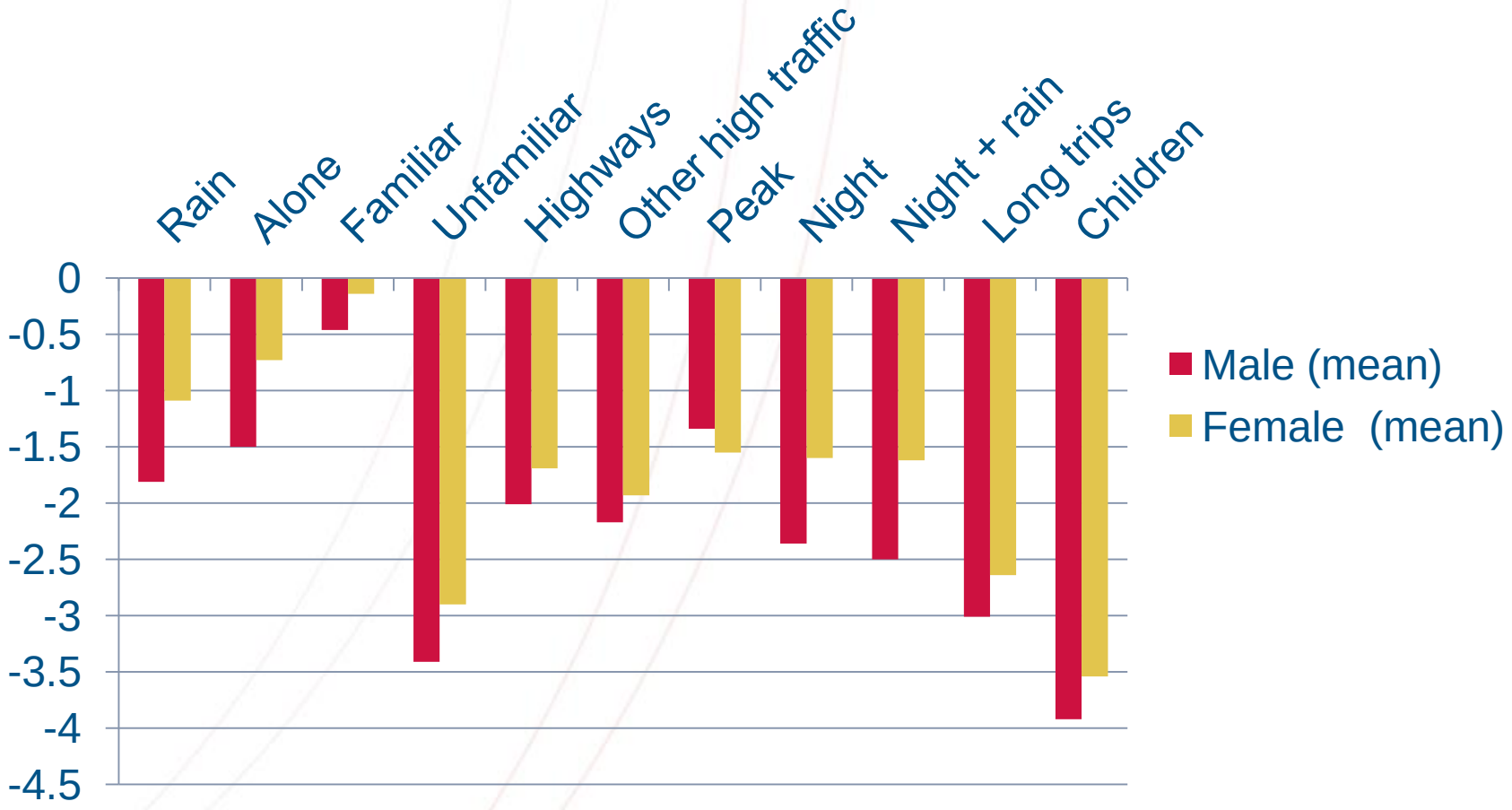
Does intended avoidance succeed?

- Stating an intention to avoid a situation may not translate into success in doing so
- For each participant, the rating for “avoid” was differenced from the rating for actual frequency of the behaviour such that:
  - A negative score means that actual avoidance is not as successful as intended avoidance
  - The higher the magnitude of the negative score, the less successful avoidance is

Success in avoidance of driving…

	Male (mean)	Female (mean)
In the rain	-1.81	-1.09
Alone	-1.50	-0.73
On familiar roads	-0.46	-0.14
On unfamiliar roads	-3.41	-2.90
On highways/freeways	-2.01	-1.69
On other high traffic roads	-2.17	-1.93
In peak hour	-1.34	-1.55
At night	-2.36	-1.60
At night when it's raining	-2.50	-1.62
On extended trips	-3.01	-2.64
With children	-3.92	-3.54

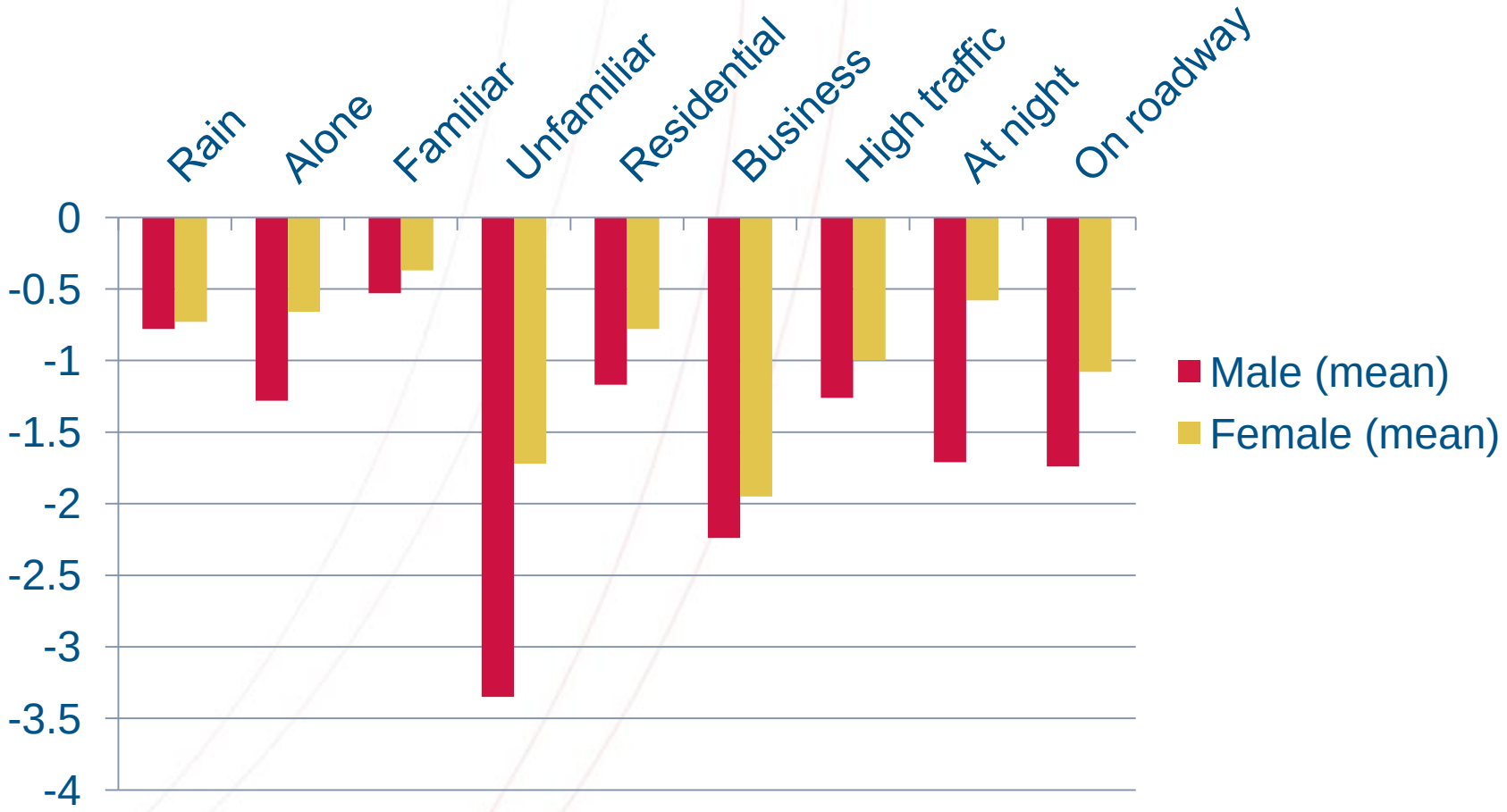
Success in avoidance of driving…



Success in avoidance of walking…

	Male (mean)	Female (mean)
In the rain	-0.78	-0.73
When alone	-1.28	-0.66
Familiar neighbourhoods	-0.53	-0.37
Unfamiliar neighbourhoods	-3.35	-1.72
Residential areas	-1.17	-0.78
Business and commercial areas	-2.24	-1.95
Along high traffic roads	-1.26	-1.00
At night	-1.71	-0.58
On the road due to lack of footpaths	-1.74	-1.08

Success in avoidance of walking…



Results

- For all situations, avoidance intention does not translate (on average) as intended
- Overall avoidance appears to be more successful for walking than driving situations
- In spite of intending less avoidance, males are less successful than females in achieving it, especially for walking in unfamiliar areas and walking at night

Further analyses

- Date are skewed
- Differences in age and exposure (as driver or pedestrian) might independently contribute
- MANOVA undertaken with consideration of:
  - Outliers (Mahalanobis distance, Cook's distance)
  - Homogeneity of variance (Levene)
  - Kurtosis
  - Need for transformation of data
- Data categorised by age and exposure

Further analyses

- Preliminary results using Pillai's trace indicate gender and age effects (but not exposure) overall for driving, though the pattern of results among individual situations is complex
- For walking, results indicate gender and exposure effects (but not age), though again the detailed results are complex

Implications so far

- Greater success in avoidance of walking situations implies that driving is less discretionary behaviour

- Older drivers may need to develop strategies to cope (e.g. carrying children, unfamiliar roads)

Implications so far

- There are higher apparent levels of avoidance of walking than driving situations by both men and women

- The factors that contribute to avoidance of walking by older people need to be further explored for potential interventions

Implications so far

- The almost universally greater avoidance of walking and driving situations amongst women suggests that the road use environment is more threatening for them

- This has implications for general access, mobility and quality of life which go beyond the transport setting

Mark your Diaries!

International Council on Alcohol, Drugs and Traffic Safety Conference (ICADTS T2013)

August 2013, Brisbane Convention and Exhibition Centre